

EM-RFO--KHLL-NONPUOPS1-2002-0004 FINAL

Non-Plutonium Operations Area I
(Name of Facility)

Balance-of-Plant
(Facility Function)

Rocky Flats Env. Technology Site Kaiser-Hill Company, L.L.C.
(Site) (Contractor)

Name: Jerry Anderson
Title: Facility Manager **Telephone No.:** (303) 966-6438
(Facility Manager/Designee)

Name: POPPELL, FRANK S
Title: RISS ESH AND Q OSE **Telephone No.:** (303) 966-6209
(Originator/Transmitter)

Name: S.L. Cunningham **Date:** 11/01/2002
(Authorized Classifier (AC))

1. Occurrence Report Number: EM-RFO--KHLL-NONPUOPS1-2002-0004

Active Fire Suppression Line Cut During Equipment Dismantlement

2. Report Type and Date: FINAL

Date Time
Notification: 09/19/2002 16:29 (MTZ)
Initial Update: 11/01/2002 16:26 (MTZ)
Latest Update: 11/01/2002 16:26 (MTZ)
Final: 11/06/2002 09:55 (MTZ)

3. Occurrence Category: Off-Normal

4. Number of Occurrences: 1 **Original OR:**

5. Division or Project: Kaiser-Hill Company, L.L.C.

6. Secretarial Office: EM - Environmental Management

7. System, Bldg., or Equipment: Building 865

8. UCNI?: No

9. Plant Area: RISS

10. Date and Time Discovered: 09/18/2002 14:33 (MTZ)

11. Date and Time Categorized: 09/18/2002 15:45 (MTZ)

12. DOE HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

13. Other Notifications:

Date	Time	Person Notified	Organization
09/18/2002	15:00 (MTZ)	Deanna McCranie	DOE/RFFO

14. Subject or Title of Occurrence:

Active Fire Suppression Line Cut During Equipment Dismantlement

15. Nature of Occurrence:

01) Facility Condition
F. Violation/Inadequate Procedures

16. Description of Occurrence:

On September 18, 2002, the Building 865 D&D subcontractor cut into an active fire suppression line while performing equipment removal. Two D&D subcontractor workers were removing piping in the overhead area of the mezzanine in the High Bay (Room 145) of Building 865. Using a sawzall, one worker cut into a live sprinkler line and heard a loud hissing sound of compressed air followed by a high-pressure spray of water. Approximately 300 gallons of water flowed out of the cut before the fire suppression system was isolated by the Fire Department. No injuries occurred.

17. Operating Conditions of Facility at Time of Occurrence:

Not Applicable

18. Activity Category:

11 - Facility Decontamination/Decommissioning

19. Immediate Actions Taken and Results:

All work was stopped immediately and electrical power to temporary equipment in the affected area was de-energized. The Fire Department, Shift Superintendent and Facility Manager were notified. Non-essential personnel evacuated the area.

20. Direct Cause:

- 3) Personnel Error
- A. Inattention to Detail

21. Contributing Cause(s):

- 3) Personnel Error
- B. Procedure Not Used or Used Incorrectly

22. Root Cause:

- 6) Management Problem
- C. Inadequate Supervision

23. Description of Cause:

The direct cause of this event was inattention to detail by the Crew Leader in that he directed the D&D worker to cut the fire suppression pipe that remained in service. The Crew Leader performed work several weeks earlier on the fire suppression system in B865. This work included the removal from service (i.e., cutting and capping) of 4 fire suppression pipes (painted red for easy identification as fire suppression equipment). When he gave the instruction to the D&D worker to cut the pipe, he felt certain that it was one of the 4 pipes he had previously taken out of service.

A contributing cause was the failure to implement the Zero-Energy Checklist process upon which the D&D Subcontractor relies to ensure systems (pressurized liquid and gas, stored energy, electrical, etc.) have been de-energized before workers are permitted to perform intrusive work. Instead of performing the Zero-Energy Checklist, the Crew Leader relied on his memory and didn't trace the fire suppression piping to the point at which he believed it to have been cut and capped.

The Root Cause of this event was the absence of supervision over the work crew resulting in out-of-scope work being performed. The supervisor for the work crew involved in this incident had been assigned other duties and was not in the area giving direction. Also, during the Plan-of-the-Day (POD) meeting earlier in the day, the cutting of piping was discussed, but there was no clear discussion of what piping had been prepared for removal and therefore could be cut. However, it was mentioned in the POD that fire suppression piping above the mezzanine

should not be removed. As such, the scope of the work to be performed was not clearly discussed and communicated to the work crew. This weakness in planning combined with the absence of supervision led to the cutting of an active fire suppression system pipe.

24. Evaluation (by Facility Manager/Designee):

This occurrence did not have any adverse affects on other site or any Building 865 safety systems. At approximately 1425 hours, one worker cut into a live sprinkler line with a Sawzall. This caused the dry system to lose its air pressure and allow fire suppression water to flow through the cut in the pipe and into the surrounding room. The Fire Department responded to the suppression system actuation when it received the alarm at 1428 and isolated the fire suppression system at the main valve on the East Side of B865. An estimated 300 gallons of water flowed onto the Mezzanine before the isolation was completed. The D&D subcontractor evacuated all unnecessary personnel and isolated all electrical power in the affected areas. The water flowed down onto the main floor of the High Bay and some made its way through the wall into the Room 149 tent (approximately 10 gallons). The sprinkler system was impaired by the Fire Department and a Fire Patrol was initiated for the duration of the impairment. All dismantlement work in B865 was shutdown. A fact finding meeting was held which provided the following additional information: - Two workers entered the Controlled Area after the lunch break to continue to remove piping from the overhead area of the Mezzanine. There was no supervision on the Mezzanine at this time. The supervisors had been assigned to perform other work by the D&D subcontractor management. - There was a General Foreman in the High Bay although he was not involved with supervising the workers on the Mezzanine. - The D&D contractor safety representative was on the Mezzanine at the time of the cut but was covering a job on the east end and was not in a position to observe the workers at the sprinkler line. - The worker had cut the pipe almost all the way through before the air escaping was noticed and the job halted. - The worker stated that his acting Crew Leader had told him that the line was de-energized prior to commencing work. They did have a bucket available to catch any residual water that might be in the line. The Crew Leader had been involved with the partial isolation of the fire suppression system a month earlier and was sure that the line that he directed to be cut was one of those that had been isolated as part of that work. He did not verify that it had been air-gapped. - There was no detectable radiological release from this event. - Removal of sprinkler pipe was not discussed at that morning's POD but it was listed as an activity that could be performed. - The zero energy checklist was not performed on this pipe prior to the cut. - Work was being performed under the "Dismantlement Work Plan and Procedures for Building 865 Complex Abatement and Demolition"

Upon the discovery of this event, Kaiser-Hill (KH) management appropriately responded to stop all D&D subcontractor operations in Building 865. On

September 24, 2002, KH issued a "Cure Notice" to the D&D subcontractor and on October 3, 2002, the D&D subcontractor responded with a Return-to-Work Plan. This plan identifies confidence factors and corrective actions to preclude issues of this type in the future.

25. Is Further Evaluation Required?: No

26. Corrective Actions (* = Date added/revised since final report was approved.)

1. ECC Project crew walkdowns on all active sprinkler systems in B865.

Responsibility: Keith Pushaw

Target Completion Date: 09/26/2002 **Completion Date:** 09/26/2002

2. Review with all personnel the JHA (#17) requirements during D&D activities. This training will include an emphasis on line cutting, specifically on the standard operating practices/procedures, task plans, and JHA limitations and requirements.

Responsibility: Keith Pushaw

Target Completion Date: 09/19/2002 **Completion Date:** 09/19/2002

3. Provide training to all project personnel on Stop Work Authority.

Responsibility: Keith Pushaw

Target Completion Date: 09/26/2002 **Completion Date:** 09/26/2002

4. Provide training to all project personnel on Zero Energy Checklists.

Responsibility: Keith Pushaw

Target Completion Date: 09/26/2002 **Completion Date:** 09/26/2002

5. ECC will ensure that no further work is performed without a superintendent being present in the building and on the floor. Face to face turnovers between superintendents are required for all future work to ensure that the relieving superintendent has the requisite knowledge of all ongoing work.

Responsibility: Keith Pushaw

Target Completion Date: 09/23/2002 **Completion Date:** 09/23/2002

6. ECC will use all future AWS Fridays as management catch-up time with only limited crews performing specific tasks as the exception.

Responsibility: Keith Pushaw

Target Completion Date: 09/23/2002 **Completion Date:** 09/23/2002

7. Evaluate and provide the plan for the final termination of sprinkler coverage in Building 865.

Responsibility: Paul Kreitz

Target Completion Date: *12/27/2002 **Completion Date:** 12/13/2002

8. Identify steps/procedures to repair the cut line to include the draining of the system prior to bringing it back online.

Responsibility: Jerry Anderson

Target Completion Date: 09/19/2002 **Completion Date:** 09/19/2002

9. Delete the sprinkler system removal from the B865 POD.

Responsibility: Keith Pushaw

Target Completion Date: 09/23/2002 **Completion Date:** 09/23/2002

10. KH will approve all future B865 PODs beginning immediately.

Responsibility: J.R. Marschall

Target Completion Date: 09/19/2002 **Completion Date:** 09/19/2002

27. Impact on Environment, Safety and Health:

There is no impact on the health and safety of the workers, the public, the environment, quality or security as a result of this occurrence.

28. Programmatic Impact:

There is no programmatic impact on the plant as a result of this occurrence; however, KH did issue a "Cure Notice" to the D&D subcontractor to which they responded with a Return-to-Work Plan to preclude issues of this type in the future.

29. Impact on Codes and Standards:

There is no impact to codes and standards as a result of this occurrence.

30. Lessons Learned:

This event demonstrates the importance of proper communication and supervision for work activities. In this event, discussion at the Plan-of-the-Day (POD) meeting did not clearly identify the piping that was to be cut. This created a misunderstanding between the supervision and the work crew resulting in cutting of the wrong piping. In addition, the work crew did not have adequate supervision which contributed to out-of-scope work being performed. Job supervision should always maintain awareness of the work crew activities and remain in the area.

31. Similar Occurrence Report Numbers:

RFO--KHLL-771OPS-2002-0020

32. User-defined Field #1:

020410 ISM=GP1-CF1

33. User-defined Field #2:

34. HQ Keyword(s):

01V--Conduct of Operations - Inadequate Job Planning Other (Start Feb 99)
03B--Fire Protection Systems - Fire Protection Equipment Degradation 11J--
Other - Subcontractor (Start July 96)

35. HQ Summary:

36. DOE Facility Representative Input:

37. DOE Program Manager Input:

38. Approvals:

Approved by: Jerry Anderson, Facility Manager/Designee
Date: 11/01/2002
Telephone No.: (303) 966-6438

Approved by: MCCRANIE, DEANNA C, Facility
Representative/Designee
Date: 11/06/2002
Telephone No.:

Approved by: Approval delegated to FR, Program
Manager/Designee
Date: 11/06/2002
Telephone No.: